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Budgets and Pre-Determination of Costs

By

WILLIAM S. KEMP,
Treasurer, Holtzer-Cabot Electric Co.,
Boston, Mass.

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Editorial Department Note

Before this publication reaches you, the International Accountants' Congress will have closed its sessions. The Congress, held at Amsterdam, July 5-9, was organized by the Netherlands Institute of Accountants, The Netherlands Union of Accountants, and the Netherlands Organization of Accountants and under the general sanction and protection of several of the Ministries of the Government. A somewhat detailed forecast of the Congress was given in Bulletin No. 13, March 1, 1926. The various organizations of professional accountants and many of the universities of the United States were asked to send representatives. The National Association of Cost Accountants was requested to provide a speaker for one of the sessions. Our Past President, William S. Kemp, was on vacation in Europe at the time and was drafted for this purpose. Though reluctantly consenting to serve, he prepared and presented the paper, Budgets and Pre-Determination of Costs, which constitutes this Official Publication. Those members who know Mr. Kemp and his kindly and genial personality feel that the N. A. C. A. was indeed fortunate in being represented by him.

Mr. Kemp was born and raised in western Massachusetts and received his education in the Massachusetts schools. After graduating he went to Chicago where he entered the banking business. Later he returned East and entered the employ of the Brookline National Bank of Brookline, Mass., now known as the Brookline Trust Company, from which position he was called to The Holtzer-Cabot Electric Company as treasurer, in which capacity he has served for over twenty years.

He is a member of the National Association of Cost Accountants, Past President of the Boston Chapter and Past National President of the Association itself.

BUDGETS AND PRE-DETERMINATION OF COSTS

The law of diminishing returns in industry, the specific subject on which you have asked me to speak is an interesting one but unfortunately one about which there is very little definite information available. We all recognize that there is a relationship between the cost price of a product and the volume of production. We recognize that there are in the main two big classes of expenses or costs, viz. (1) fixed, being those which must be incurred regardless of the volume of production, and (2) variable, being those which vary more or less closely with the production. Some businesses do attempt to find the point, i.e., the volume of sales or business, at which income just meets all expenses. This is done with fair accuracy in some cases and serves as an excellent guide or criterion to management in fixing policies. Beyond this point, since all the fixed expenses will have been already recovered, an increasing return will be made on additional business if the sales price is maintained, or even at a lesser sale price, because the in-

creased production necessary to supply the increased sales will of necessity bring about a decreased unit cost of product.

There is probably a limit to the increased return so secured, i.e., a point will be reached in each given case at which plant expansion necessary to care for increasing production will bring increased fixed charges which will in turn cause decreasing returns. Another factor to be considered is the increasing sales resistance encountered in the struggle to secure a larger relative share of the market as an outlet for increased production. Keener competition will tend to decrease the returns per unit of product sold. Only the most careful estimates and the most discriminating judgment can determine even approximately at what point the law of decreasing returns becomes effective.

Since I can do nothing more than generalize on the limitations set by these laws of increasing and diminishing returns, I shall devote the major part of my paper to a consideration of the more basic subject of estimates on which this and many other managerial policies must rest. It is along these lines that the cost accountants of the United States of America are working at the present time especially with reference to reducing costs and securing a more even return on the invested capital.

The production cost of every commodity, particularly commodities made of several different materials and involving many operations, when made at different times, will widely vary. This fact is too well known to require an enumeration of the many uncontrollable elements which cause these variations.

It is a further recognized fact that the original sale price of almost every commodity is usually fixed by catalog, quotation or contract before it is completely fabricated.

These two facts, namely, the variations in the cost of production and the original sales price of the product being fixed before its completion, necessarily result in a wide variation in the net returns of the business for one period as compared with another.

Under the older system of accounting and in a business where the management had not changed and where all conditions remain the same for the periods compared, these variations were hard to explain satisfactorily to the managing officials and in the financial reports and statements. This was particularly true as the plants and organizations grew in size.

Thus arose the problem of eliminating through the accounting, as far as possible, these variations and of properly showing in statement form those which could not be eliminated. In other words, it became the problem of the accountants to eliminate the peaks and the valleys originally shown in the cost of production and to bring these figures more nearly into a straight line, and thereby establish a more uniform return from the enterprise when figured on the cost price.

In the attempt to accomplish this result the first law to be recognized was *the continuity of time.*

While it is necessary for accounting purposes to use such measures of time as a day, week, month or year, it must be recognized that if a proper and uniform return is to be had upon the capital invested in an enterprise, the cost of the product must be that determined over a sufficient period of time to include reasonable variations.

Under the old and well understood job cost system, actual quantities of materials at their actual cost were charged to specific orders. Similarly direct labor was charged to these orders and not long ago, all of the overhead of a given month was apportioned to the production of that month by some arbitrary plan.

That method was supposed to give *actual costs*. Experience, however, has taught us that "actual costs" are not absolute and what we most desire and need in the average business, not only for quoting and fixing sales prices but also as a basis for managerial control and efficiency is "Normal or Standard Costs."

While it is probably true that during the past few years the job cost method has become standardized as to its procedure it still fails to meet modern requirements. Factory production methods have become highly specialized, with the result that in many plants the customer's order loses its identity in the factory and production of complete articles or of many of their component parts becomes continuous.

To explain more fully this point I beg to quote from an article written by me sometime ago describing certain features of a cost system used by a company with which I am connected. A description of the various parts, operations, values, etc., in the manufacture of an electric bell have just been given. I then said: "The fact that certain parts are common to other sizes will make it clear to all that such a product must be made on the stock parts order system, that is to say, the manufacturing order would not call for the manufacture of so many bells of this type and size, but instead each part would be manufactured on a separate production order in whatever quantities it could be made most efficiently and economically, all factors being considered, such as capital invested, obsolescence, etc. As these are manufactured they are placed in finished parts stores and requisitioned on an assembly order as completed bells are needed.

"Production orders for the manufacture of parts under such a system are usually issued on the basis of a high and low limit. Some inexpensive parts which are made on an automatic screw machine, for instance, might be made in quantities that would cover the normal demand for a year, while some other more expensive part, the manufacture of which required no time for 'setting up' might be manufactured only as required for an assembly order. This means that when assembling one of these bells, parts are used some of which may have been completed one month, some two months, some three months, and so on up to a year or more ago

and the raw materials for which may have been bought long before that.

"Under such conditions, what should be considered the cost of the product on the date the completed article was assembled? If we decide that it should be actual cost, of what value would such a cost be at that time for determining current or future costs on the article? So much for actual costs."

This illustrates not only the desirability but also the necessity in my opinion, for a "normal" or "standard cost" in certain lines of production.

As yet there is no recognized definition of "normal costs" or "standard costs" nor is there uniformity of procedure in their use. Nevertheless, during the past few years numerous companies in the United States have adopted cost systems based upon standards or predetermined cost figures with such satisfactory results that cost accounting through the use of standards is rapidly gaining in favor with executives and accountants.

For this discussion it does not seem necessary that any particular definition be adopted. I would like, therefore, to use the term "Standard Cost" as embracing "Normal Costs," "Predetermined Costs," "Budget Cost," "Estimated Cost" and "Replacement Cost." It is not to be understood that there is no difference in these several kinds of costs. The difference, however, is largely in the accounting technique as each one is arrived at by the use of predetermined figures in the accounting in place of actual costs.

Since the cost of production is reduced as the volume of output increases, and is increased as the volume of output decreases, it is necessary in establishing standard costs and in forecasting results to predetermine or estimate as accurately as possible the volume of production for a given period.

This is usually based upon the anticipated sales. The accuracy with which the amount of the sales for a future period can be estimated depends upon the kind of business, the firm's ability to command and retain its proportion of the total business, its knowledge of the business as a whole, and on the amount of past experience and statistical information at hand. The longer and more widespread the business is, the more accurate should be this estimate.

The preparation of a "Sales Budget" is usually made up about as follows: Shortly before the end of the fiscal year each salesman is instructed to interview each one of his customers and obtain the customer's opinion as to the amount of goods (sizes, grades, etc.) he will require during the coming year and the probable dates of delivery wanted.

The salesman makes this detailed report to his District Sales Manager. Each District Sales Manager reports to the General Sales Manager, each of whom, on specially prepared forms, applies his own judgment and records in detail his own estimate so that the final figure or total estimate is the result of the composite judg-

ment of all, each having certain knowledge, experience and facts upon which his forecast is made.

This total estimate of the possible business of the coming year is then submitted to the factory executives who analyze the amount with reference to their ability to make the product specified, meet the deliveries called for, etc.

This study involves the question of ability to obtain raw materials on the dates required, the necessary labor, skilled and unskilled, plant extension, if any, new equipment, estimated cost, and other problems of like character.

The sales department's forecast of possible sales together with the factory's report on its ability and requirements to manufacture the product called for are then submitted to the financial department which in turn studies the forecast from a financial viewpoint and determines whether or not the program as submitted can be financed and what new capital, if any, will be required and how the same can be obtained.

All these reports are then submitted to the president or executive board for study and decision as to whether or not steps shall be taken to accept the volume of business forecasted, and if not, the maximum volume that shall be accepted.

The final quota established for the year in advance is largely a possible goal to be obtained and must be approached with proper business conservatism. After making the necessary provisions for handling this volume decided upon, the first step is to authorize a definite volume of production for the first period, which may be a month, three month, or more, depending upon the kind of business. This amount for the first period will be based upon the forecast and during that period a close and careful study will be made of conditions affecting the period, so that in due time necessary adjustment for that period can be made if conditions have changed and demand an increase or decrease in volume. In other words all long-time forecasts are subject to revision during any of the intervening schedule periods.

Upon what volume of production the standard cost price shall be established and how often it shall be changed is a question of management to be decided by each firm or company.

Whatever the volume may be, once the standard cost price is established, it becomes a definite basis for all calculations. Since a standard cost is one established under certain specified conditions, the nearer we can operate to those conditions the nearer our predetermined returns will be to our actual returns.

Such results are best accomplished through the use of the budget system, which is an essential feature of standard costs.

The budget has long been used in governmental affairs, but its application to business enterprises, particularly as applied to manufacturing and sales costs, is comparatively recent. The kind of a budget to which I refer is "a recognized plan of operation which expresses the purpose of all the activities of the business over a

future period; a co-ordinated plan of business conduct which outlines future operations from certain known fundamental conditions; a certified plan and schedule of operations which is not intended to be altered except by and with the concurrence of those who acquiesced in the plan."

A detailed discussion of budgets is not required at this time but there are two points which I deem of sufficient importance to mention. (1) The classification of the budget figures should tie in with the departmental financial figures and the accounting procedure relating to both should be such as to reflect the results of each center of activity. Through these figures it should always be possible to promptly localize variations of all kinds, efficiency as well as inefficiency, and to determine who is responsible for the results.

(2) The importance of establishing an authorative administration of the budget. Regardless of where the budget data are collected, analyzed, and co-ordinated, the person who administers the same should be an executive with power and one who has a comprehensive knowledge of the business in all its branches, a man of sound judgment and with a high degree of executive ability. While firm in his decisions, he must be considerate and above all fair-minded in order to secure co-operation; for only through co-operation can the various departmental activities be co-ordinated and controlled.

One purpose of the budget and controlled standard costs has been to eliminate extreme variations in costs of one period and another. It has been found that there are certain expenses in some lines of business which were heretofore often included in the overhead expense which should be treated as a separate item of costs. I refer to those lines of business in which the manufactured product is the result of some new discovery which called for a large preliminary expense; also those lines of business in which changes in the product are constantly being made as a result of popular demand or advancement in the art itself.

The electrical industry is a good example of the kind of business I refer to, and in the accounting procedure for that industry in the United States an account has been established and designated, "The Cost of Development and Complaints." In the fourth edition of the Standard Accounting and Cost System for the Electrical Manufacturing Industry this account is briefly defined as follows:

"1. Development: Research and engineering expenditures preliminary and incident to the regular manufacture of products, such as time of engineers and draftsmen, indirect expenses of engineering and drafting departments, also experimental labor, material and expense incurred in the manufacturing departments, in making, testing and correcting initial product while in process of development and all expenditures incurred for initial patterns, molds, jigs, punches, dies and special tools as defined on page 10,

Section 3, also patents purchased (as liquidated annually), payments in satisfaction of judgments for infringement of patent rights, royalties paid when traceable to a specific product.

"2. Special Tools: Duplicate and replacement (not initial) patterns, molds, jigs, punches, dies and special tools as defined on page 10, Section 3.

"3. Complaints: Expenditures incurred, after delivery of product, to remedy customer's complaints when due to defects in design, manufacture or installation."

This account is of great importance to a company developing and manufacturing a number of different lines of product.

By collecting all this class of expenses into a Development Account under proper sub-accounts for each line of product, there has been kept out of overhead expenses a very large sum which, under older methods of accounting would have been distributed over the entire product upon the same percentage basis as other overhead expenses.

Further, these expenses having been collected in this manner, it is not only possible to liquidate them directly against the specific line of product, on account of which they were incurred, but to liquidate each account within whatever periods of time may be decided upon. Provided standard costs and the budgetary system have been properly established and the account set up to take care of the cost of development and complaints, it is reasonable to expect that very definite returns can be forecasted upon any given volume of business. Furthermore, these figures furnish a basis upon which studies can be made of the many factors which tend to diminish or increase net returns.

The increase in net returns on the cost price due to increased volume of business and the decrease in returns and losses due to decreased volume of business above or below a certain amount is well known, but sufficient knowledge of the economic laws and the facts surrounding those conditions is lacking. In periods of depression or decreased sales due to overproduction it has been the practice of many to cut the sales price and accept business at cost or less in order to offset or reduce the loss in overhead expense.

While this practice under keen competition is to be expected, it is a selfish policy and detrimental to business as a whole. All methods of forced sales, when a legitimate demand for the produce does not exist, are bad practice and only prolong the time necessary to get back to a reasonable relation between supply and demand.

The attitude of the United States Government toward trusts, consolidations and the exchange of information between trade associations in the past has done much to foster ignorant and unfair competition and overproduction. There are now hopeful signs that business organizations may consolidate and that associations may legally exchange trade and statistical information.

Under these changed conditions and with the progress that is being made in the standardization of production and distribution,

it is hoped that a reasonable control of production will result. If such conditions can be brought about they will do much toward the stabilization of sales prices, labor employment and returns on invested capital.

Thus far this discussion has related to production costs as established by manufacturing concerns, exclusive of the cost to sell and distribute the product.

While great progress has been made in the last few years in the development of accurate production costs the matter of determining accurate selling and distribution costs seems to have been almost wholly neglected.

That there are enormous wastes and inefficiency in this branch of the business is generally admitted, although until recently both seem to have been regarded as inevitable.

The accountant has now tackled this problem and it is in this division of the business that this greatest change in methods will come in the near future and great economies and savings will be effected.

It is generally admitted that in a manufacturing business there are no activities which do not serve these two functions, viz., production and distribution. If this is true, then there should be a unit production cost and a unit selling cost.

A paper on the subject of "Administrative and Selling Costs" was delivered at the Convention of the National Association of Cost Accountants held at Detroit in June, 1925, by Mr. William B. Castenholz, Accountant, Chicago, U.S.A. Mr. Castenholz has expressed my own views so much better than I can that I should like to take from his paper the following extracts:

"Now the thing that induced me to take an interest in this matter of the proper allocation of distribution and administrative costs, was the lack of essential information in the average monthly profit and loss statement. As to the profit and loss statement, I feel I am going to draw away from accepted usage and principles. I may perhaps be treading on new ground. The average monthly profit and loss statement is absolutely illogical and untrue. Suppose we have an efficient cost system that gives us accurate cost? Our profit and loss statement then is accurate down to the gross profit. In other words, we record our monthly sales, we apply against those monthly sales the actual cost of manufacturing the goods that have been sold, and then positively lose our heads and become unreasonable from that point on. We apply the actual disbursements or expenditures for administrative and selling costs of any particular month against the monthly shipments regardless of relationships. It sometimes comes out this way—during one month we may have shipments of $100,000 and the next month of $300,000; administrative and selling expenses may be the same for both months. That is illogical and inaccurate. We take the actual expenditures rather than the cost of distributing those goods which have been sold; therefore the expenses which are deducted from

the gross profits, even in a concern where an effective cost system exists, have as a rule no relationship at all to the shipments that have actually gone out and have been registered as sales. In this respect, I believe the average profit and loss statement prepared monthly is positively illogical and untrue.

"The cost of sales account which comes from the cost tabulation is an account which arises distinctly from inventory accounts. Here is another point I want to make. In cost accounting we really do not recognize expenses. We do not recognize expenses *as expenses;* we recognize all expenses as creating inventory values, because all of our costs find their way not into expenses accounts (except possibly on the general books for control purposes) but into inventories in process or inventories of finished goods. From the cost standpoint there are no expenses, and only as goods are shipped do costs or expenses find lodgment against sales, and then only against sales as the particular sales are made. You see what I am driving at.

"All expenses, all costs are recoverable through sales. The manufacturing costs and expenses such as depreciation, insurance, taxes, repairs, certainly are expenses from a theoretical viewpoint; the same is true of the salaries in the main office or of accounting department expenses. Now, if all the factory expenses are inventoried and are all recovered through sales, why should we not adopt some similar or like process in connection with the distribution costs which are likewise recovered through sales? Why should we not apply against sales, as they are shipped, the distribution costs which are allocable to those particular shipments, rather than to apply, as we do, on our monthly profit and loss statement the distribution costs or the administrative costs just as they happen to occur and thereby show all kinds of ridiculous situations in our profit and loss statement?

"You will have to admit that there is a cost of distribution; you will have to admit that there is a cost of production and that the cost of production is possibly somewhat higher or wider than just the cost created by the machinery turning around, and that the cost of distribution is somewhat bigger than just that represented by the activities of the salesmen visiting customers.

"If that be true and if it is logical that we develop a cost of production as evidenced by the cost of sales account, which we apply against particular shipments as they go out, I say that it is equally possible and necessary to get the *cost of distribution for the particular commodities as they are shipped.*

"Cost accounting has developed along the line of standard costs, scheduled costs, predetermined unit costs. In the same way, ladies and gentlemen, I believe we have got to come to the point where the distribution cost will be standardized and we will have a standard distribution cost, a scheduled cost of distribution for the different products within the different territories and for the products within the different territories served by the different salesmen."

At the time of the convention at which the paper above referred to was read, I had the honor to be President of the Association and in bringing this discussion to a close I should like to quote a few of my own remarks on that occasion and which reflect the work the National Association of Cost Accountants is doing.

"The technique of modern cost accounting is very recent. Even the principles of cost accounting were not generally understood until within the last fifteen years. The fundamental principles of cost accounting in all lines of industry are theoretically the same but the way and manner in which similar results are obtained differ widely.

"While our Association stands for sound accounting principles its chief aim is in the practical and efficient application of those principles in such a way as to give management prompt, reliable and comprehensive information for its guidance.

"The National Association of Cost Accountants has played a most important part in bringing about a more general use of standard costs, normal burden rates, and the budget system. These three important subjects were not new when our Association was formed, but many industrial cost accountants at that time did not know either how to establish them or how to use them properly. Dissemination of the knowledge and technique relating to these subjects has been accomplished through our Chapter activities, our Regional Conferences, our International Conferences, our Publications, and the personal acquaintances formed between our members. Today the use of these methods is accepted as being essential to the continued success of an industrial business.

"Equally important is the maintenance of a perpetual inventory of work in process, completed parts, finished goods, and stores of materials of all kinds. A complete detailed record of all fixed assets is also important. Without such records a true monthly balance sheet, profit and loss statement and other operating reports cannot be properly prepared.

"Most of the business of our country is carried on by corporations, the capital of which is furnished by stockholders who have no active part in their management. The policies and actual control of the management of such corporations is vested in the hands of a few officials. These officers are, in a measure, 'managing trustees' for the stockholders and as such have grave responsibilities. I firmly believe that the officers of a corporation who fail so to conduct the affairs of the corporation that they do not know with reasonable accuracy, at least once a month, the actual conditions of all departments of the business, are delinquent in their duties and guilty of mismanagement.

"In these days of quick communication to every part of the world and of prompt transportation, conditions shift over night and it is no longer financially safe to carry on a business for a year, as was formerly done and is yet done by many corporations, without proper statements of conditions in the interim. Since the

World War many a bank has learned this fact, and I predict that the time is not far distant when the banks will hesitate to grant loans to any firm or corporation that does not so conduct its accounting that a balance sheet and profit and loss statement are available at least monthly.

"That there will develop a sharper line of separation between the production division of industry and the sales and distribution division, I am fully convinced. Not only will this division appear in the operating statements but will also be found in the organization. Each division will be so organized that it will have clear-cut duties and responsibilities and the accounting so arranged that there will be a measure of efficiency for each.

"It is my further belief that in the future our internal or subsidiary profit and loss statement will be rendered in much greater detail. These statements will not only show the net operating gain or loss but they will show on the debit or credit side every important account which goes to make up the net result. In other words, it will be the duty of the cost accountant of the future to present a complete analysis of the gains and losses in every operating department and on every line of product sold by the sales department.

"Strictly speaking there are gains and losses resulting from normal operations and gains and losses resulting from increased or decreased market value of the materials while on hand or in process. The cost accountant will not measure up to his responsibilities until he makes a reasonable segregation of gains and losses from these sources in the profit and loss statement. 'Eternal analysis is the price of success.' "